DEPARTMENT of ENVIRONMENTAL SERVICES Water Division - Watershed Management Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake: ISLAND POND	Lake Area (ha):	201.49
Town: DERRY	Maximum depth (m):	24.3
County: Rockingham	Mean depth (m):	5.4
River Basin: Merrimack	Volume (m³):	11558000
Latitude: 42°51'56" N	Relative depth:	1.5
Longitude: 71°12'43" W	Shore configuration:	2.81
Elevation (ft): 2		- /
Shore length (m): 146		
Watershed area (ha): 44		0.55
<pre>% watershed ponded:</pre>	2.4 Lake type: natu	ural w/dam

BIOLOGICAL:	12 March 2003	6 September 2002
DOM. PHYTOPLANKTON (% TOTAL) #1	SYNURA 90%	TABELLARIA 30%
#2	ASTERIONELLA 4%	CERATIUM 15%
#3		FRAGILARIA 12%
PHYTOPLANKTON ABUNDANCE (units/mL)		
CHLOROPHYLL-A (µg/L)		3.30
DOM. ZOOPLANKTON (% TOTAL) #1	NAUPLIUS LARVA 51%	KERATELLA 46%
#2	KERATELLA 9%	
#3		
ROTIFERS/LITER	· 12	76
MICROCRUSTACEA/LITER	38	37
ZOOPLANKTON ABUNDANCE (#/L)	53	129
VASCULAR PLANT ABUNDANCE		Abundant
SECCHI DISK TRANSPARENCY (m)		5.0
BOTTOM DISSOLVED OXYGEN (mg/L)	4.7	0.8
BACTERIA (E. coli, #/100 ml) #1		3
#2		
#3		

SUMMER THERMAL STRATIFICATION:

stratified

Depth of thermocline (m): 6.8
Hypolimnion volume (m³): 2241500
Anoxic volume (m³): 3097000

CHEMICAL:			ISLAND PO	OND	
	12 March	n 2003	6 8	September	2002
DEPTH (m)	7.0	14.0	3.0	12.0	18.0
pH (units)	6.4	6.3	6.8	6.3	6.3
A.N.C. (Alkalinity)	12.3	12.2	12.3	11.5	13.2
NITRATE NITROGEN	0.16	0.19	< 0.05		0.22
TOTAL KJELDAHL NITROGEN	0.40	0.40	0.30	0.10	0.20
TOTAL PHOSPHORUS	0.006	0.006	0.007	0.008	0.013
CONDUCTIVITY (µmhos/cm)	211.0	216.0	202.0	189.0	189.4
APPARENT COLOR (cpu)	19	19	19	19	33
MAGNESIUM			1.87		
CALCIUM	,		9.4		
SODIUM			23.1		
POTASSIUM			2.15		
CHLORIDE	46	47	46		41
SULFATE	9	9	8		7
TN : TP	93	98	43		32
CALCITE SATURATION INDEX			2.4		

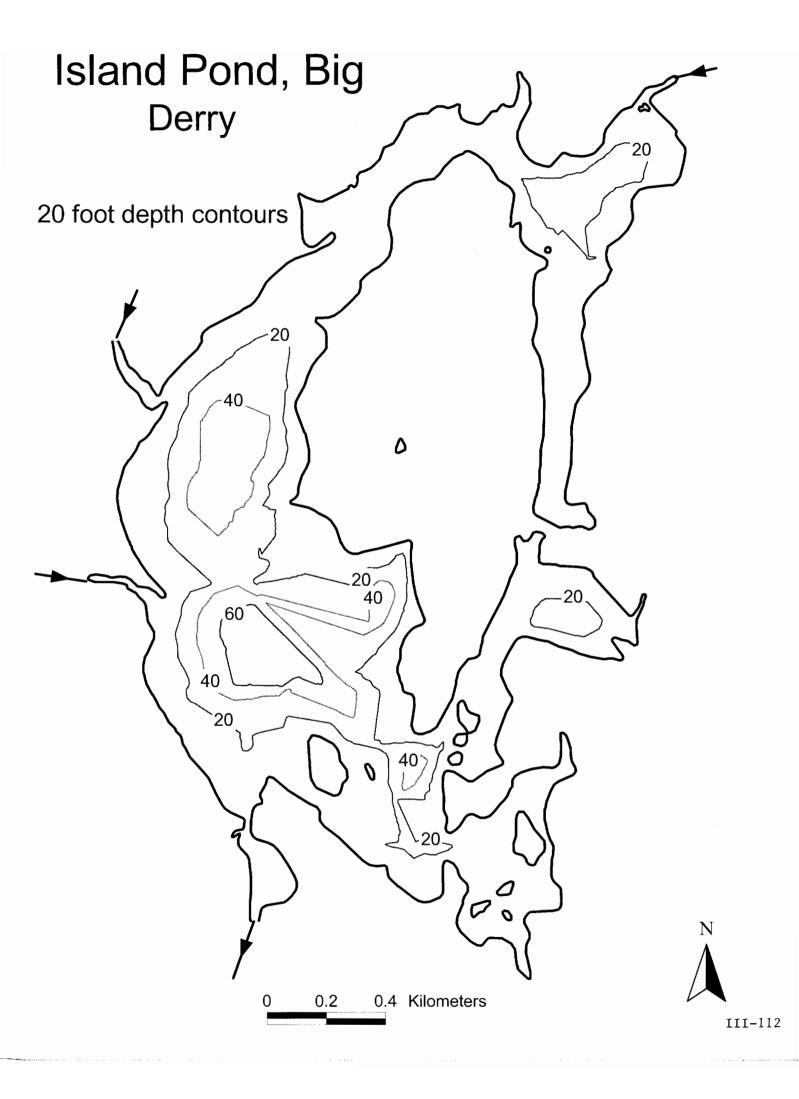
All results in mg/L unless indicated otherwise

TROPHIC CLASSIFICATION: 2002

D.O.	S.D.	PLANT	CHL	TOTAL	CLASS
6	2	5	0	13	Eutro.

COMMENTS:

- 1. aka Big Island Pond.
- No public boat access; need key from the association to use the launch.
 Previously surveyed in 1976 and 1985 and a participant in VLAP since 1990.
- 4. Clear water, low nutrient pond with low planktonic productivity; however, it was rated eutrophic because of a bottom dissolved oxygen (DO)depletion and the presence of abundant rooted plant growth, including the exotic rooted plants fanwort (Cabomba) and milfoil (M. heterophyllum). The pond's trophic classification went from oligotrophic in 1976 to mesotrophic in 1985 to eutrophic in 2002, primarily because of decreased bottom DO and increased rooted plant abundance.
- 5. The trophic parameters chlorophyll, Secchi transparency and phosphorus have not changed significantly since 1990, as collected by VLAP.
- 6. Elevated sodium, chloride, conductivity and other cation values suggest road salt and other urban
- 7. Densely developed pond with many boats.



FIELD DATA SHEET

TOWN: DERRY LAKE: ISLAND POND

WEATHER: Sunny, warm & very windy DATE: 09/06/2002

	DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
	0.1	21.8	7.5	86 %
	1.0	21.8	7.5	85 %
	2.0	21.7	7.5	85 %
	3.0	21.7	7.4	84 %
	4.0	21.6	7.4	84 %
	5.0	21.6	7.4	84 %
	6.0	21.5	7.3	83 %
	7.0	14.9	0.7	7 %
	8.0	13.7	0.5	5 %
	9.0	11.8	0.9	8 %
	10.0	10.2	1.4	12 %
	11.0	9.6	1.7	15 %
1	12.0	9.2	1.7	15 %
	13.0	8.9	1.5	13 %
<u> </u>	14.0	8.7	1.3	11 %
	15.0	8.5	1.1	9 %
	16.0	8.4	0.9	8 %
	17.0	8.4	0.9	7 %
	18.0	8.3	0.8	7 %
	19.0	8.3	0.6	6 %
	20.0	8.2	0.7	6 %
\neg	21.0	8.1	0.7	6 %
	22.0	8.1	0.7	6 %
	23.0	8.1	0.8	7 %

SECCHI DISK (m):

5.0

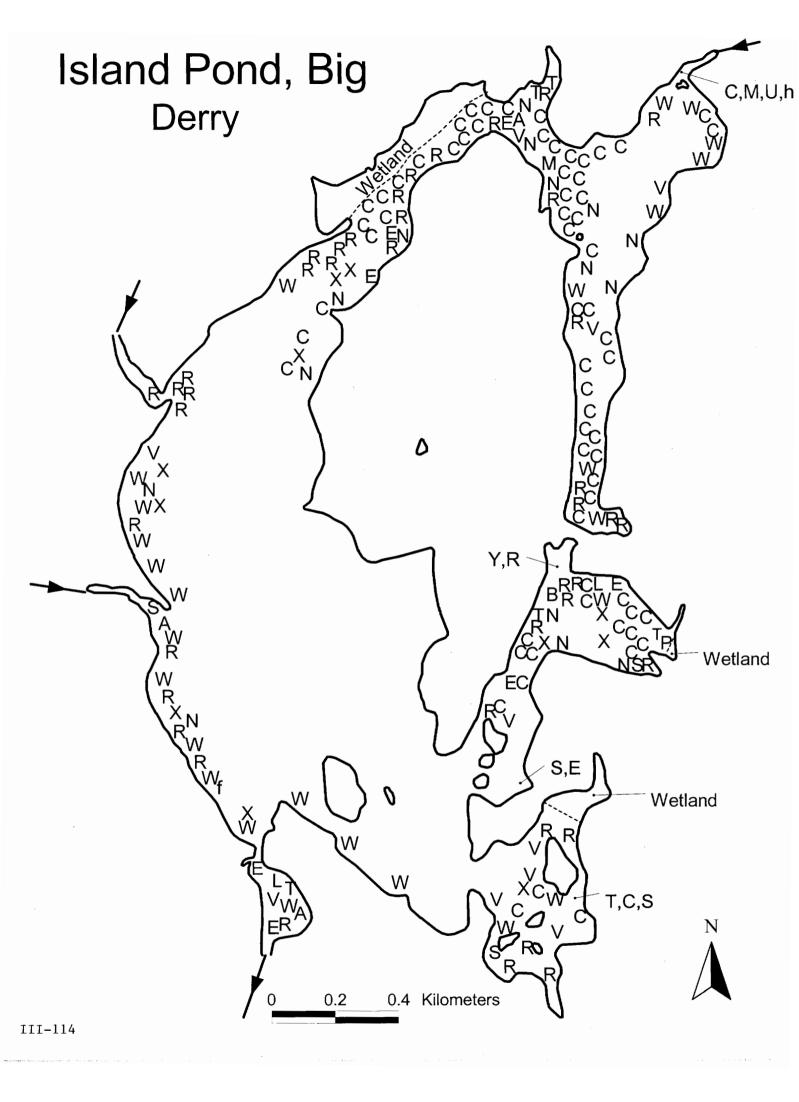
COMMENTS:

BOTTOM DEPTH (m): 24.2

> TIME: 1245

The D.O. profile displayed an unusual decrease in the metalimnion (7 to 8 meters), then a slight increase at the top of the hypolimnion before decreasing again near the bottom. Zooplankton or organic matter may have accumulated in the metalimnion and exerted an oxygen demand.

*Dissolved oxygen values are in mg/L



AQUATIC PLANT SURVEY

LAK	E: ISLAND POND	IOWN: DERRY	DATE: 09/06/2002	
Key	PLANT NAME		ADUMDANCE	
Rey	GENERIC	COMMON	ABUNDANCE	
E	Eriocaulon septangulare	Pipewort	Sparse	
W	Potamogeton	Pondweed	Sparse	
A	Sagittaria	Arrowhead	Sparse	
Т	Typha	Cattail	Sparse	
L	Lythrum salicaria	Purple loosestrife	Sparse	
S	Sparganium	Bur reed	Sparse	
R	Cyperaceae	Non-flowering sedge	Scattered	
С	Cabomba caroliniana	Fanwort	Abundant	
P	Pontederia cordata	Pickerelweed	Sparse	
V	Vallisneria americana	Tape grass	Sparse	
X		Sterile thread-like leaf	Common	
N	Nymphaea	White water lily	Scattered	
В	Brasenia schreberi	Water shield	Sparse	
Y	Nuphar	Yellow water lily	Sparse	
М	Myriophyllum heterophyllum	Water milfoil	Sparse	
U	Utricularia	Bladderwort	Sparse	
f	Potamogeton perfoliatus	Pondweed	Sparse	
h	Gratiola lutea	Hedge hyssop	Sparse	

OVERALL ABUNDANCE: Abundant

GENERAL OBSERVATIONS:

- 1. Many different species of plants were present but most were sparse.
- 2. Exotic plants fanwort and milfoil were present. Milfoil was sparse observed only in the marina at the northeast end of the pond; fanwort was abundant, mostly in the narrow areas along the north and eastern shores of the pond.
- 3. Although plants were abundant, they did not impede navigation significantly except on the back side of the island where water depths were shallow.